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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/529,040 | 03/24/2005 | Hiromasa Sakai | 050340-0186 | 6230 |

20277 7590 02/08/2007
MCDERMOTT WILL & EMERY LLP
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WASHINGTON, DC 20005-3096

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| EXAMINER |
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LEWIS, BEN

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| ART UNIT | PAPER NUMBER |
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1745

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 02/08/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|-----------------|-----------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/529,040 | SAKAI, HIROMASA | |
| | Examiner | Art Unit | |
| | Ben Lewis | 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>3/24/05, 9/27/06</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanai et al. (U.S. Pub. No. 2001/0021468 A1).

With respect to claims 1, 9 and 10, Kanai et al. disclose a fuel cell system (title) wherein the fuel cell system of this invention comprises a fuel cell (1,101) which generates power by using a supply of fuel gas and oxidizing gas; a water-permeable-type humidifier (a hollow fiber membrane water collecting apparatus 2, a water-permeable-type humidifier 123) which collects water from exhaust gas exhausted from the fuel cell, and humidifies the gas supply to the fuel cell; and an auxiliary humidifier which is provided with a vapor/liquid separator (3 "radiator", a condenser 126) which separates the water from the exhaust gas, a collected water storage tank (4, a reservoir section of a condenser 126) which stores the separated collected water (9), and an injector (17,126b) which injects the collected water, stored in the collected water storage tank, to the gas supply or the exhaust gas (Paragraph 0013).

With respect to the defrosting device, Kanai et al. teach that freezing can be prevented by providing an electrical heater (anti-freeze apparatus; not shown in FIG. 15) inside the collected water storage tank 4 (Paragraph 0156).

With respect to a flow generator, Kanai et al. teach that in step S65, the collected water supply pump 7 is operated and the collected water 9 is transferred to the humidifying water auxiliary tank 18 (Paragraph 0128).

With respect to a controller, Kanai et al. teach that the number of rotations of the collected water supply pump 7 may be controlled by using a pressure gauge to detect the water pressure, or by using a preset data table to determine the relationship between the gas supply pressure and the number of rotations of the collected water supply pump 7 (Paragraph 0109).

With respect to claim 2, Kanai et al. teach that freezing can be prevented by providing an electrical heater (anti-freeze apparatus; not shown in FIG. 15) inside the collected water storage tank 4 (Paragraph 0156).

With respect to claim 3, Kanai et al. teach that anti-freeze heaters (not shown), and sensors T2 and T3 for detecting the temperatures of the reservoir sections of the condenser 126 and the auxiliary water tank 126d respectively, are attached to the condenser 126 and the auxiliary water tank 126d. Based on the results detected by the sensors T2 and T3, the heaters are activated in order to prevent freezing when the temperatures of the reservoir sections "coolant" of the condenser 126 and the auxiliary water tank 126d fall below temperatures near freezing (Paragraph 0239).

With respect to claims 6 and 8, Kanai et al. teach that when the temperature of the collected water "fuel cell temperature" is below the predetermined temperature, the flow proceeds to step S87, in which it is determined whether an outside air temperature, obtained by using an outside air temperature sensor (not shown), is below a predetermined temperature (e.g. 0 °C) (Paragraph 0145). Kanai et al. also teach that start the operation for preventing the collected water from freezing, in step S83, the three way valve 21 is switched to the humidifying water auxiliary tank 18 side (Paragraph 0141).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanai et al. (U.S. Pub. No. 2001/002468 A1) in view of Ballantine et al. (U.S. Pub. No. 2003/0064262 A1).

With respect to claims 4-5 and 7, Kanai et al. disclose a fuel cell system in paragraph 2 above. Kanai et al does not specifically teach bypassing the radiator. However, Ballantine et al disclose a fuel system wherein the coolant circuit is adapted to

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transfer heat from the fuel cell to the heat sink, and a radiator is provided to remove heat from the coolant circuit. The radiator can include a fan connected to the controller, where the controller is configured to reduce an output of the fan when there is a heat demand signal. The controller is further configured to increase an output of the fan when there is no heat demand signal. Ballantine et al also teach that the coolant circuit further includes a bypass valve and a radiator bypass circuit. The valve "switch" is connected to the controller, and the controller is adapted to actuate the valve to divert a coolant flow from the radiator to the radiator bypass circuit when there is a heat demand signal. The controller is further adapted to actuate the valve to divert the coolant flow from the radiator bypass circuit to the radiator when there is no heat demand signal (Paragraph 0113 - 0114). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the controlled radiator bypass stream of Ballantine et al. into the fuel cell system of Kanai et al. because a controlled radiator bypass stream would allow the heat generated by the fuel cell to be controlled more efficiently.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ben Lewis

Patent Examiner
Art Unit 1745


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER